

# LLWW DESCRIPTIONS AND LLWW MAPPING AREAS

## Data Overview

The Utah Geological Survey (UGS) has applied additional Landscape Position, Landform, Water Flow Paths, and Waterbody Type (LLWW) attributes to updated wetland and riparian National Wetland Inventory (NWI) mapping to enhance utility and information provided by the new mapping. The UGS also applied landscape-models to the updated mapping to identify likely functions provided by wetlands across the landscape.

Wetlands and riparian areas were mapped according to U.S. Fish and Wildlife Service (USFWS) guidelines using recent, high-resolution imagery collected during 2016. LLWW attributes were applied to wetlands and waterbodies according to keys developed by the Colorado Natural Heritage Program (CNHP; Lemly and others, 2018). Riparian areas are not included in the keys and LLWW attributes were not applied to these features. For this project, we applied LLWW attributes using a multi-step process of manual assignment, automated queries, and subsequent manual correction and review to develop final LLWW attributes (Goodwin and Molinari, 2022).

The combination of LLWW attributes with the standard NWI attributes provides very detailed information about each wetland and allows greater distinction between more wetland types than what is possible through each dataset alone. This ability to distinguish between a wide variety of wetlands, combined with spatial analysis of the wetland mapping, allows for evaluation of which wetlands are likely to provide unique habitats or functions at a landscape level.

We modeled wetland functions across the project area using our updated mapping to create a dataset that not only depicts the distribution and extent of wetlands, but also identifies which wetlands are likely to provide a given function and how likely it is to provide that function. We modeled nine important wetland functions, of which five were physical functions such as bank and shoreline stabilization and four were unique habitat types such as waterfowl habitat.

Eight of these models relied on CNHP-developed crosswalks linking the NWI attributes and LLWW attributes to the likelihood of a feature providing a particular function (Marshall and others, 2018). The models categorized wetlands as having a “High” or “Moderate” likelihood; high likelihood wetlands had characteristics that were well-documented as providing that function and moderate likelihood wetlands had potential but were limited by some characteristic like nearby disturbance or lack of woody vegetation. The ninth function model identifies suitable habitat for the Ute ladies’-tresses (*Spiranthes diluvialis*); model development followed a similar approach, but the model was developed by the UGS in collaboration with the USFWS. The Ute ladies’-tresses habitat model was applied to all riparian and wetland mapping.

## GIS Data included in Final Mapping geodatabase:

### FINAL DATASET

#### LLWW\_Mapping\_Areas: Extent of updated mapping

1. ProjectName: Mapping area name
2. Organization: Organization that completed the mapping
3. BaseImagery: Base imagery all features are mapped to
4. Report: Location of supplemental mapping report

**NWI\_LLWW\_Function\_Mapping:** The full mapping dataset including:

1. ULT\_Join: Unique identifier common between all datasets

*NWI descriptions*

2. CowAttribute: Full Cowardin attribute included in NWI dataset
3. CowClass: Cowardin system and class information
4. CowRegime: Cowardin water regime, riparian features called out as Riparian
5. CowMod: Applied Cowardin modifiers

*HGM classes*

6. HGM\_classes: Hydrogeomorphic (HGM) classes assigned to vegetated or seasonally flooded wetlands. HGM classes are used by the U.S. Army Corps of Engineers and serve as the basis for assessing wetland functions by categorizing wetlands into distinct classes likely to provide similar suites of functions.
  - a. Riverine: Wetlands located in active floodplains where the hydrodynamics are primarily driven by flooding and connections to the alluvial aquifer. Riverine wetlands like floodplains, abandoned oxbows, and fringe wetlands along the river channel are more likely to store and reduce floodwater velocities and intercept sediments.
  - b. Lacustrine Fringe: Wetlands located along the shores of large lakes where the hydrodynamics are primarily driven by fluctuating lake levels. Lacustrine fringe wetlands, like seasonally flooded shorelines and fringe wetlands, are more likely to attenuate storm surges and provide crucial wildlife habitat.
  - c. Slope: Wetlands located in headwater positions or along toe slopes where surface water is unlikely to pool, and the hydrodynamics are primarily driven by groundwater emergence. Slope wetlands like seeps and headwater meadows are more likely to maintain downstream baseflows and sequester carbon.
  - d. Depressional: Wetlands located in isolated basins and depressions where hydrodynamics are driven by accumulating runoff or intersecting shallow groundwater. Depressional wetlands like kettles or some playas are more likely to recharge groundwater and provide unique wildlife habitats.
  - e. Flats: These wetlands are in flat (less than 2% slopes) areas with mineral or organic soils where the hydrodynamics are driven by precipitation accumulation. Flat wetlands like extensive playas are more likely to recharge groundwater and provide unique wildlife habitats.

*LLWW descriptions*

7. FeatureType: Feature type according to LLWW classification
  - a. Waterbody: Area of relatively permanent open water or flowing channel
  - b. Wetland: Area characterized by seasonal water or supporting dense vegetation
  - c. Riparian: Area mapped as a riparian feature and not assigned LLWW descriptions
8. Landscape: Landscape position codes for each wetland or waterbody feature
  - a. LO—Lotic: Rivers and channels, impoundments, lakes, stream-fed ponds and basins, floodplains and features connected to the alluvial aquifer

- b. LE—Lentic: Features connected to lakes or affected by the rising and lowering of lake levels including features like shorelines, fringe wetlands, and occasionally flooded areas at the upstream end of impoundments
  - c. TE—Terrene: Features that are wholly surrounded by uplands, isolated, artificially created or irrigated, fed by precipitation accumulation, collect sheet flows, or are groundwater and spring-fed
9. Landform\_Waterbody: Landform and waterbody type codes for each wetland and waterbody feature. Landform codes are applied to wetland features and waterbody types are applied to waterbody features.

*Waterbody types*

- a. ST1—Permanent stream: Stream with flowing water generally year-round
- b. ST2—Seasonal stream: Stream with flowing water for at least one month throughout the growing season
- c. ST3—Temporary stream: Stream with flowing water for short periods during most years
- d. ST4—Intermittent stream: Stream with occasional flows following rainstorms and precipitation events
- e. ST5—Artificial: Ditch or canal constructed in uplands
- f. R1—River: River with flowing water generally year-round
- g. PD—Pond: Waterbody with still, generally permanent water that is less than 20 acres
- h. LK—Lake: Waterbody with still, generally permanent water that is greater than 20 acres

*Landform*

- i. BA—Basin: Distinct depression
  - j. FP—Floodplain: Flat areas near streams or rivers supported by alluvial aquifers or inundated by floodwaters every 1 to 5 years
  - k. FR—Fringe: Wetlands occurring along the banks of streams, rivers, or ponds that are generally permanent flooded or saturated
  - l. FL—Flat: Flat areas fed only by precipitation with less than 2 percent slopes
  - m. SL—Slope: Sloped areas fed by groundwater, irrigation, sheet flow or other water source with slopes greater than 2 percent
10. Flowpath: flowpath codes assigned to each feature
- a. TH—Throughflow: Water flows through the waterbody, even if interrupted by small impoundments (e.g., impounded ponds along a stream channel); waterbody is not a lake with periodic raising or lowering of lake levels
  - b. TB—Throughflow-bidirectional: Water flow is through a lake where residence time of water is generally longer and accompanied by periodic raising or lowering of lake levels, this often occurs in large dammed or excavated lakes or lakes situated in historical floodplains that are now separated by manmade or natural levees.
  - c. OU—Outflow: Water flows out of the waterbody via a river, stream, or ditch, with little or no observable surface water inflow (inflow could be from ephemeral drainages, non-channelized inputs of snowmelt, precipitation, local surface runoff, or groundwater discharge); waterbody serves as a source for surface water
  - d. IN—Inflow: Water flow enters via a river, stream, ditch, or is pumped in, but does not exit the pond, lake, or reservoir (outflow could be through ephemeral drainages or groundwater discharge); waterbody serves as a sink for surface water

- e. BI—Bidirectional: Waterbody is a large, isolated lake and water levels fluctuate due to both rising and falling lake levels and wind-driven wave action
  - f. VR—Vertical: Waterbody is a pond or small isolated lake; water levels rise as the pond or lake fills with precipitation, surface runoff, and/or groundwater discharge and lowers as water is evaporated or lost to groundwater seepage; wave action is rare or nonexistent. This can apply to Lotic or Lentic Ponds that lack a dominant surface water connection with a stream or lake but are driven by fluctuation in the aquifer.
11. LLWW\_Base: The full LLWW base code for each feature that includes the landscape position, landform or waterbody type, and flowpath for each wetland or waterbody feature
12. LLWW\_Modifiers: All of the LLWW modifiers applied for each feature
- a. ag—agriculture: Waterbody or wetland used for agricultural purposes, such as crop production or livestock watering
  - b. al—alpine: Waterbody or wetland is located above tree line.
  - c. aq—aquaculture: Waterbody or wetland used for aquaculture
  - d. ar—artificial flow: Hydrologic regime is artificial, typically controlled through ditches or pumps or hydrologic connectivity is regulated by water control structures (e.g., diked/impounded wetlands along streams).
  - e. au—augmented flow: Hydrologic regime is augmented by large trans-mountain or trans-basin diversions of water.
  - f. ay—arroyo: Temporary or ephemeral stream in an arid region
  - g. ba—burn area: Waterbody or wetland is located within a burn area perimeter
  - h. bg—bog: Wetland (or waterbody within a wetland) is peat-accumulating, has the minimum required organic soil depth to qualify as a peatland (40 cm in the upper 80 cm), and saturation is maintained by precipitation.
  - i. bk—beetle kill forest: Waterbody or wetland is located within a beetle kill area.
  - j. bv—beaver: Waterbody or wetland formed or influenced by beaver activity
  - k. ch—channelized: River or stream has been artificially straightened or redirected or deeply incised from excess erosion.
  - l. dr—partially drained: Waterbody or wetland is partially drained.
  - m. ds—discharge to stream channel: Wetland contributes to streamflow (e.g., sloped wetland adjacent to the stream or within a stream valley)
  - n. ex—excavated: Waterbody or wetland is excavated
  - o. fm—floating mat: Floating mat of vegetation extending into or over open water; can be used for the vegetation itself and the waterbody containing the vegetation
  - p. fn—fen: Wetland (or waterbody within a wetland) is peat-accumulating, has the minimum required organic soil depth to qualify as a peatland (40 cm in the upper 80 cm), and saturation is maintained by groundwater discharge.
  - q. fs—flashy: Hydrologic regime is considered flashy, or surface-runoff dominated, with high variability in the occurrence and magnitude of peak flow events; levels are often rainfall-driven and unpredictable. This includes waterbodies in catchments with shallow soil and/or bedrock that are prone to flash flooding, as well as urbanized catchments with a high amount of impervious surfaces.
  - r. gf—geomorphic floodplain: Waterbody or wetland is located within a geomorphic floodplain (up to the approximate 100-year floodplain boundary), even if fed by water sources outside the floodplain.
  - s. gl—glacial: Waterbody or wetland is located within a historical or current glacial landscape.

- t. go—golf: Waterbody or wetland is located within a golf course.
- u. gr—gravel: Waterbody or wetland is excavated or impounded for mining of sand or gravel.
- v. gw—groundwater-driven: Hydrologic regime is primarily groundwater-driven, such that levels are predictable and dominated by stable groundwater inflow for most (if not all) of the year.
- w. gz—grazed: Wetland shows obvious signs of intensive grazing by livestock or native ungulates
- x. hf—hay field: Wetland is managed as a hay field and/or pasture with grass cover.
- y. hs—hot spring: Waterbody or wetland is influenced by a geothermal spring (can be warm to hot).
- z. hw—headwater: Waterbody or wetland is in the upper reaches of a watershed and often the source of a stream network.
- aa. hy—hydropower: River, stream, or lake is dammed for hydropower generation
- bb. id—interdunal: Waterbody or wetland located within a dune field
- cc. il— island: Waterbody or wetland located on land completely surrounded by water within either a lake, pond, or stream (not formed by ditches that encircle the wetland)
- dd. im—impounded: Waterbody or wetland is impounded
- ee. ir—irrigation-influenced: Hydrologic regime is strongly influenced by irrigation, either direct application or seepage.
- ff. it—temporary-intermittent flow: Hydrologic regime is temporarily intermittent or ephemeral (including inflow driven by short duration precipitation event, including monsoonal events). Cowardin water regimes of A or J.
- gg. kt—kettle: Lake, pond, or wetland located within a formerly glaciated landscape (but not in the Prairie Pothole region) and formed by ice blocks left by retreating glaciers
- hh. ld—locked and dammed: Channelized river with a series of locks and dams to aid navigation
- ii. Lg—logged: Waterbody or wetland is subject to or within the perimeter of recent timber harvest area, particularly clear-cutting or other large-scale timber harvests.
- jj. ml—mineral: Wetland is composed of mineral soils, within an emphasis on mineral soil flats rather than any mineral soil wetland.
- kk. mm—mining: Waterbody or wetland is excavated or impounded for mining of coal or hard rock (e.g., quarry pond or pond to capture mining waste).
- ll. mr—mire: Wetland has accumulation of peat, but not of sufficient depth to qualify as a bog or fen; often interspersed with, or along the margins of a bog or fen.
- mm. ox—oxbow: Lake, pond, or wetland located in a distinct depression within the floodplain of a river or stream, including recently active oxbows and meander scars
- nn. pd—pond fringe: Wetland formed along the shore of a pond
- oo. pf—permafrost: Waterbody or wetland is located on permafrost.
- pp. pl—playa: Shallow lake, pond, or wetland with fluctuating water levels depending on local precipitation patterns and extent of groundwater connection; typically with no natural outlet; can be saline or not
- qq. pp—prairie pothole: Lake, pond, or wetland located within the formerly glaciated Prairie Pothole region; water sources include direct precipitation, runoff from surrounding areas, and groundwater; generally associated with Quaternary glacial deposits such as moraines, glacial valleys, and outwash plains

- rr. re—restoration site: Waterbody or wetland has been modified by known restoration or enhancement activities (e.g., earthwork, planting, vegetation removal, beaver re-introductions, etc.); requires site-specific data to apply.
  - ss. Rf—regulated flow: Hydrologic regime is regulated by dam(s) or diversion(s) upstream, such that the flow regime has been substantially altered in terms of the timing, frequency, magnitude, and duration of peak and low flows.
  - tt. rn—rainfall: Hydrologic regime, including mean annual flow and peak flows, is primarily driven by rainfall.
  - uu. rr—run of river dammed: River or stream section with low dam(s) allowing flow during high water periods; often used for low-head hydropower generation or irrigation diversion(s)
  - vv. sa—saline: Lake, pond, or wetland that occurs on saline soil, often with obvious salt crust visible
  - ww. sf—spring-fed: Hydrologic regime includes inputs from a natural spring
  - xx. sl—seepage lake: Lake dominated by inputs from surface runoff, groundwater seepage and precipitation; may be subject to seasonal water level fluctuation; typically with no natural inlet or outlet
  - yy. sn—snowmelt: Hydrologic regime, including mean annual flow and peak flows, is primarily driven by snowmelt.
  - zz. sr—snow + rain: Hydrologic regime, including mean annual flow and peak flows, is driven by a mixture of snowmelt and rainfall.
  - aaa.sv—stream valley: Slope wetland located in a narrow valley
  - bbb. sw—stormwater: Waterbody or wetland is used to detain or retain stormwater runoff.
  - ccc.ts—toe-of-slope: Slope wetland located at the base of a hill or slope.
  - ddd. wm—wildlife management: Waterbody or wetland is managed for wildlife (e.g., waterfowl habitat); includes the management of water levels.
  - eee.ww—wastewater: Waterbody or wetland is used for wastewater retention and/or treatment (e.g., oil and gas, domestic).
13. ag\_mod through ww\_mod: Whether or not each individual LLWW modifier has been applied to a feature

#### *Function mapping*

- 14. BankStabilization: Results of bank stabilization model developed from CNHP methods
  - a. 0—None: Not identified by the models as providing this function
  - b. 1—Moderate: Potentially provides function but limited by some characteristic
  - c. 2—High: Well-documented to provide function or has optimal conditions
- 15. CarbonSeq: Results of the carbon sequestration model developed from CNHP methods
  - a. 0—None: Not identified by the models as providing this function
  - b. 1—Moderate: Potentially provides function but limited by some characteristic
  - c. 2—High: Well-documented to provide function or has optimal conditions
- 16. SedRetention: Results of the sediment retention model developed from CNHP methods
  - a. 0—None: Not identified by the model as providing this function
  - b. 1—Average high flows: Likely to intercept sediments during average (1–5 year recurrence) peak flows
  - c. 2—Historic high flows: Likely to intercept sediments during historic flood events
  - d. 3—Both: Likely to intercept sediments during both average and historic flows

17. StreamMain: Results of the streamflow maintenance model developed from CNHP methods
  - a. 0—None: Not identified by the models as providing this function
  - b. 1—Moderate: Potentially provides function but limited by some characteristic
  - c. 2—High: Well-documented to provide function or has optimal conditions
18. AquaticInv: Results of the aquatic invertebrate habitat model developed from CNHP methods
  - a. 0—None: Not identified by the models as providing this function
  - b. 1—Moderate: Potentially provides function but limited by some characteristic
  - c. 2—High: Well-documented to provide function or has optimal conditions
19. FishHabitat: Results of the fish habitat model developed from CNHP methods
  - a. 0—None: Not identified by the models as providing this function
  - b. 1—Moderate: Potentially provides function but limited by some characteristic
  - c. 2—High: Well-documented to provide function or has optimal conditions
20. Shorebird: Results of the shorebird habitat model developed from CNHP methods
  - a. 0—None: Not identified by the models as providing this function
  - b. 1—Moderate: Potentially provides function but limited by some characteristic
  - c. 2—High: Well-documented to provide function or has optimal conditions
21. Waterfowl: Results of the waterfowl habitat model developed from CNHP methods
  - a. 0—None: Not identified by the models as providing this function
  - b. 1—Moderate: Potentially provides function but limited by some characteristic
  - c. 2—High: Well-documented to provide function or has optimal conditions
22. SurfaceDetention: Results of the surface detention and flood attenuation model developed from CNHP methods
  - a. 0—None: Not identified by the models as providing this function
  - b. 1—Moderate: Potentially provides function but limited by some characteristic
  - c. 2—High: Well-documented to provide function or has optimal conditions
23. ULT\_type: Type of Ute ladies'-tresses habitat identified by the UGS Ute ladies'-tresses habitat model
  - a. GW-Meadow: Groundwater-supported wet meadows and isolated pastures and meadows
  - b. River terrace: River floodplains, shorelines, and riparian features along rivers
  - c. Lentic terrace: Lake floodplains, riparian features along lakes and ponds
  - d. Perimeter feature: Ponds, rivers, or other semi-permanently flooded features where individual plants could exist in the saturated margins
  - e. Non-habitat - Not selected: Feature not identified by the model as potential habitat
  - f. Non-habitat - Flooded: Feature permanently flooded and considered non-habitat
  - g. Non-habitat - Saline: Feature too saline and considered non-habitat
  - h. Non-habitat - Phragmites: Feature dominated by dense phragmites and considered non-habitat
  - i. Non-habitat – tamarisk: Feature dominated by dense tamarisk and considered non-habitat
  - j. Non-habitat – Agricultural: Agriculture has entirely replaced native vegetation and considered non-habitat
  - k. Non-habitat – Artificial lagoon: Feature is an artificial lagoon created for wastewater treatment and considered non-habitat
  - l. Non-habitat – Intermittent: Feature supported by flashy and intermittent hydrology and considered non-habitat

- m. Non-habitat – Elevation: Feature is above the 7000' threshold used to define Ute ladies'-tresses potential habitat and is considered non-habitat
- 24. ULT\_quality: Likelihood of feature being able to support Ute ladies'-tresses identified by the UGS Ute ladies'-tresses habitat model
  - a. 0—None: Not identified by the model as Ute ladies'-tresses habitat
  - b. 1—Moderate: Matched habitat descriptions but limited by some characteristic like excessive grazing, past disturbance, or dense canopy cover
  - c. 2—High: Matched habitat descriptions or documented as potential habitat in literature review
- 25. AVG\_TWI: Average reclassified topographic wetness index value for the feature derived from multipath model; topographic wetness index values classified to integers ranging from 1 to 9 using natural jenks with higher values representing features more likely to accumulate and concentrate surface runoff
- 26. AVG\_Elev: Average elevation (m) of the feature derived from 10-m DEM
- 27. AVG\_Dist: Average disturbance of the feature derived from 2015 Landscape Disturbance Index models (Menuz, 2015).
- 28. AVG\_Slope: Average slope of the feature derived from 10-m DEM
- 29. HM\_All\_CNHP: Sum of all CNHP model outputs for the feature; used to develop and show heatmaps of wetland function across project area
- 30. HM\_Physical\_CNHP: Sum of all CNHP physical model outputs for the feature (Bank stabilization, Carbon sequestration, Sediment retention, Streamflow maintenance, and Surface water detention); used to show heatmaps of wetland function across project area
- 31. HM\_Habitat\_CNHP: Sum of all CNHP habitat model outputs for the feature (Aquatic Invertebrate, Fish, Shorebird, and Waterfowl); used to show heatmaps of wetland function across the project area
- 32. HM\_ULT: Results of UGS Ute ladies'-tresses habitat quality; used to show heatmaps of ULT likelihood across the project area
- 33. HGM\_Class: Hydrogeomorphic classes assigned to each feature
- 34. Count\_CNHP: Value to identify if feature included in CNHP function models
  - a. 1—Yes: wetland or waterbody feature included by CNHP function models
  - b. 0—No: riparian feature not included in CNHP function models
- 35. Count\_ULT: Value to identify if feature included in UGS Ute ladies'-tresses function models
  - a. 1—Yes: Wetland, waterbody or riparian feature included in UGS model

## HOTSPOTS DATASET

**HotSpot\_Grid:** One-km2 grid used as input for all hotspot analysis results. Includes the number of features intersecting each grid cell, as well as the sum and average values of several function model outputs.

- 1. Join\_Count: Number of all mapped features intersecting each grid cell
- 2. Count\_CNHP: Number of wetland or waterbody features considered by the CNHP models intersecting each grid cell
- 3. Count\_ULT: Number of wetland, waterbody, or riparian features considered by the UGS Ute ladies'-tresses habitat model intersecting each grid cell
- 4. BankStabilization: Sum of bank stabilization model values for all features intersecting each grid cell



5. CarbonSeq: Sum of carbon sequestration model values for all features intersecting each grid cell
6. SedRetention: Sum of sediment retention model values for all features intersecting each grid cell
7. StreamMain: Sum of streamflow maintenance model values for all features intersecting each grid cell
8. AquaticInv: Sum of aquatic invertebrate habitat model values for all features intersecting each grid cell
9. Shorebird: Sum of shorebird habitat model values for all features intersecting each grid cell
10. Waterfowl: Sum of waterfowl habitat values for all features intersecting each grid cell
11. SurfaceDetention: Sum of surface detentions model values for all features intersecting each grid cell
12. ULT\_Quality: Sum of Ute ladies'-tresses habitat quality model values for all features intersecting each grid cell
13. HM\_All\_CNHP: Sum of all CNHP function values for all features intersecting cell
14. HM\_Physical\_CNHP: Sum of all CNHP physical function values for all features intersecting cell (Bank stabilization, Carbon sequestration, Sediment retention, Streamflow maintenance, and Surface water detention)
15. HM\_Hab\_CNHP: Sum of all CNHP function values for all features intersecting cell (Aquatic Invertebrate, Fish, Shorebird, and Waterfowl)
16. HM\_ULT\_CNHP: Sum of all Ute ladies'-tresses function values for all features intersecting cell
17. Avg\_allCNHP: Average value of all CNHP functions for each feature intersecting cell ( $\text{HM\_All\_CNHP} / \text{Count\_CNHP}$ )
18. Avg\_physCNHP: Average value of physical CNHP functions for each feature intersecting cell ( $\text{HM\_Phys\_CNHP} / \text{Count\_CNHP}$ )
19. Avg\_habCNHP: Average value of habitat CNHP functions for each feature intersecting cell ( $\text{HM\_Hab\_CNHP} / \text{Count\_CNHP}$ )
20. Avg\_ULT: Average value of all Ute ladies'-tresses functions for each feature intersecting cell ( $\text{HM\_ULT} / \text{Count\_ULT}$ )

**FinalFunctions\_1kmgrid\_HotSpot\_AllCNHP:** Hotspot analysis output based on the Avg\_allCNHP field from the Hotspot\_Grid feature

**FinalFunctions\_1kmgrid\_HotSpot\_habCNHP:** Hotspot analysis output based on the Avg\_habCNHP field from the Hotspot\_Grid feature

**FinalFunctions\_1kmgrid\_HotSpot\_phyCNHP:** Hotspot analysis output based on the Avg\_physCNHP field from the Hotspot\_Grid feature

**FinalFunctions\_1kmgrid\_HotSpot\_ULT:** Hotspot analysis output based on the Avg\_ULT field from the Hotspot\_Grid feature

## REFERENCES

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